

**What is claimed is:**

1. A method for converting a continuous stream of liquid into a linear sequence of drops, the method comprising the steps of:
  - 5 a. imposing on the stream of liquid a first cyclical perturbation having a first frequency  $f_1$  and
  - b. simultaneously with the first cyclical perturbation, imposing on the stream of liquid at least one further cyclical perturbation to create a net cyclical perturbation, the at least one further cyclical perturbation having frequency  
10  $f_k$ , wherein,
    - i.  $f_1/f_k = M/N$ , M and N are integers, and
    - ii. M is not an integer multiple of N and
    - iii. N is not an integer multiple of M.
- 15 2. The method of claim 1, wherein there is a set of m sequential drops created during every period of the net cyclical perturbation, and the n-th drop in every set of m sequential drops has the same selectability state, wherein  $n=1,2,3\dots m$ .
- 20 3. The method of claim 2, comprising the further step of removing from within each set of m sequential drops at least one drop that is not print-selectable.
4. The method of claim 3, wherein there are no two print-selectable drops adjacent to each other within the linear sequence of drops.
- 25 5. The method of claim 3, wherein the quality of print-selectable drops is determined by at least one of:

- a. the phase difference between the first cyclical perturbation and any one of the at least one further cyclical perturbation,
- b. the phase difference between any two of the at least one further cyclical perturbation,
- c. the amplitude of the first cyclical perturbation, and
- d. the amplitude of any one of the at least one further cyclical perturbation.

6. A method for converting a first plurality of continuous streams of liquid into a second plurality of linear sequences of drops, the method comprising the steps of:

- a. imposing on each member of the first plurality a first cyclical perturbation having a first frequency  $f_1$  and
- b. simultaneously with the first cyclical perturbation, imposing on each member of the first plurality at least one further cyclical perturbation to create a net cyclical perturbation, the at least one further cyclical perturbation having frequency  $f_k$ , wherein,
  - i.  $f_1/f_k = M/N$ , M and N are integers, and
  - ii. M is not an integer multiple of N and
  - iii. N is not an integer multiple of M.

7. The method of claim 6, wherein there is a set of m sequential drops created during every period of the net cyclical perturbation in each member of the first plurality, and the n-th drop in every set of m sequential drops has the same selectability state, wherein  $n=1,2,3...m$ .

8. The method of claim 7, comprising the further step of removing from within each set of  $m$  sequential drops at least one drop that is not print-selectable.
- 5 9. The method of claim 8, wherein there are no two print-selectable drops adjacent to each other within the linear sequence of drops.
10. The method of claim 8, wherein the quality of print-selectable drops is determined by at least one of:
- 10 a. the phase difference between the first cyclical perturbation and any one of the at least one further cyclical perturbation,
- b. the phase difference between any two of the at least one further cyclical perturbation,
- c. the amplitude of the first cyclical perturbation, and
- 15 d. the amplitude of any one of the at least one further cyclical perturbation.
11. The method of claim 10, comprising the further steps of
- a. selecting at least one print-selectable drop from one member of the second plurality of linear sequences of drops,
- 20 b. establishing charges on all the nearest neighbor drops to the at least one print-selectable drop within adjacent members of the second plurality of linear sequences of drops to make the sum of the induced charge on the at least one print-selectable drop a small predetermined value.
- 25 12. The method of claim 11, wherein the predetermined value is substantially zero.

13. The method of claim 10, wherein the phase of the net cyclical perturbation is not the same for all members of the first plurality.
14. The method of claim 10, wherein M and N are chosen to produce a print selectable drop sequence that matches a 1:X guard drop scheme.
15. The method of claim 14, wherein the 1:X guard drop scheme is a 1:4 guard drop scheme.
16. The method of claim 14, wherein the 1:X guard drop scheme is a 1:3 guard drop scheme.
17. The method of claim 16 applied in an inkjet printer, the inkjet printer comprising inkjet nozzles electrically connected to bonding pads by conductive traces, each bonding pad is connected to four inkjet nozzles, the conductive traces to the four inkjet nozzles not crossing over one another.
18. A method for converting a continuous stream of liquid into a linear sequence of drops, the method comprising the steps of:
- imposing on the stream of liquid a first cyclical perturbation having a first frequency  $f_1$  and
  - simultaneously with the first cyclical perturbation, imposing on the stream of liquid a second cyclical perturbation having frequency  $f_2$  to create a net cyclical perturbation, wherein,
    - $f_1/f_2 = M/N$ , M and N are integers, and
    - M is not an integer multiple of N and

iii. N is not an integer multiple of M.

19. The method of claim 18, wherein there is a set of m sequential drops created during every period of the net cyclical perturbation, and the n-th drop in every set of m sequential drops has the same selectability state, wherein  $n=1,2,3\dots m$ .
20. The method of claim 19, comprising the further step of removing from within each set of m sequential drops at least one drop that is not print-selectable.
21. The method of claim 20, wherein there are no two print-selectable drops adjacent to each other within the linear sequence of drops.
22. The method of claim 20, wherein the quality of print-selectable drops is determined by at least one of:
- a. the phase difference between the first cyclical perturbation and the second cyclical perturbation,
  - b. the amplitude of the first cyclical perturbation, and
  - c. the amplitude of the second cyclical perturbation.
23. A method for converting a first plurality of continuous streams of liquid into a second plurality of linear sequences of drops, the method comprising the steps of:
- a. imposing on each member of the first plurality a first cyclical perturbation having a first frequency  $f_1$  and

b. simultaneously with the first cyclical perturbation, imposing on each member of the first plurality a second cyclical perturbation having frequency  $f_2$  to create a net cyclical perturbation, wherein

i.  $f_1/f_2 = M/N$ , M and N are integers,

ii. M is not an integer multiple of N and

iii. N is not an integer multiple of M.

24. The method of claim 23, wherein there is a set of m sequential drops created during every period of the net cyclical perturbation in each member of the first plurality, and the n-th drop in every set of m sequential drops has the same selectability state, wherein  $n=1,2,3\dots m$ .

25. The method of claim 24, comprising the further step of removing from within each set of m sequential drops at least one drop that is not print-selectable.

26. The method of claim 25, wherein there are no two print-selectable drops adjacent to each other within the linear sequence of drops.

27. The method of claim 25, wherein the quality of print-selectable drops is determined by at least one of:

- a. the phase difference between the first cyclical perturbation and the second cyclical perturbation,
- b. the amplitude of the first cyclical perturbation, and
- c. the amplitude of the second cyclical perturbation.

28. The method of claim 27, comprising the further steps of

- a. selecting at least one print-selectable drop from one member of the second plurality of linear sequences of drops,
- b. establishing charges on all the nearest neighbor drops to the at least one print-selectable drop within adjacent members of the second plurality of linear sequences of drops to make the sum of the induced charge on the at least one print-selectable drop a small predetermined value.

29. The method of claim 28, wherein the predetermined value is substantially zero.

30. The method of claim 27, wherein the phase of the net cyclical perturbation is not the same for all members of the first plurality.

31. The method of claim 27, wherein M and N are chosen to produce a print selectable drop sequence that matches a 1:X guard drop scheme.

32. The method of claim 31, wherein the 1:X guard drop scheme is a 1:4 guard drop scheme.

33. The method of claim 31, wherein the 1:X guard drop scheme is a 1:3 guard drop scheme.

34. The method of claim 33 applied in an inkjet printer, the inkjet printer comprising inkjet nozzles electrically connected to bonding pads by conductive traces, each bonding pad is connected to four inkjet nozzles, the conductive traces to the four inkjet nozzles not crossing over one another.